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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/385,591	08/29/1999	GARY L. GRAUNKE	42390.P7573	9395

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EXAMINER
KIM, JUNG W

ART UNIT	PAPER NUMBER
2132	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/385,591	GRAUNKE ET AL.	
	Examiner	Art Unit	
	Jung W Kim	2132	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *28-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *28-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 28-47 have been examined. The applicant in the amendment filed on March 1, 2004 has canceled claims 1-27.

Response to Amendment

2. The objection to the specification is withdrawn as the amendment to the disclosure overcomes the objection.

3. The objection to claims 23-25 are withdrawn as the claims have been canceled.

Drawings

4. The drawings were received on March 1, 2004. These drawings are acceptable.

Specification

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: 'Dual use block/stream cipher apparatus using a key section to provide a key stream to a data section'.

Claim Objections

6. Claims 38 and 40 are objected to because of the following informalities: claims 38 and 40 claim key sections to include 'linear feedback registers'-these should be

'linear feedback shift registers'; claims 38 and 40 misspell the word 'and'. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 28, 31, 36, 39, 42, and 46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 28 recites the limitations "the modified random number" and "the transformed block cipher key". There is insufficient antecedent basis for these limitations in the claim.

10. Claims 31, 36, 42, and 46 recite the limitation "the transformed versions". There is insufficient antecedent basis for this limitation in the claims.

11. Claim 39 recites the limitations "the selectively modified cipher key", "the transformed selectively modified cipher key", and "the transformed data bit sequence". There is insufficient antecedent basis for these limitations in the claim.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 28, 32, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Feistel U.S. Patent No. 4,316,055 (hereinafter Feistel 4,316,055). As per claim 28, Feistel 4,316,055 discloses a combination block/stream encoding apparatus (see Feistel 4,316,055; Title, Abstract) comprising:

a. a block cipher key section to be initialized with a block cipher key, having transformation units to transform the block cipher key (see Feistel 4,316,055; col. 5, lines 34-40; Figure 4, Reference Nos. 9, 10, 24, 25 and related text);

b. a data section coupled with the block cipher key section to be initialized with a random number, having transformation units to transform the random number based on the transformed block cipher key (see Feistel 4,316,055; Figure 1, MSR and Transformation Element);

c. a stream cipher key section coupled with the block cipher key section to modify the block cipher key according to a stream cipher key to produce data bits to dynamically modify the random number in the data block section (see Feistel 4,316,055; col. 5, lines 31-34; Figure 3, Reference No. 3 and related text); and

d. a mapping section to receive the modified random number and the transformed block cipher key and generate a pseudo random bit sequence based on the modified random number and the transformed block cipher key (see Feistel 4,316,055; Figure 2a, Reference Nos. 5, 20, 21; Figure 2b, Reference Nos. 22, 23, 24, 25, 26 MSR; Figure 3, Reference Nos. 4, 5, and 6).

The aforementioned covers claim 28.

14. As per claims 32 and 33, Feistel 4,316,055 discloses a combination block/stream encoding apparatus as outlined above in the claim 28 rejection under 35 U.S.C. 102(b). In addition, the data section is initialized with either plain text or a derived random number (see Feistel 4,316,055; col. 12, line 33-col. 13, line 14; col. 10, line 42-col. 11, line 2).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claims 29-31, 34-37, 39, and 41-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feistel 4,316,055 in view of Feistel US. Patent No. 3,798,360 (hereinafter Feistel 3,798,360). As per claims 34-36, Feistel 4,316,055 discloses a combination block/stream encoding apparatus as outlined above in the claim 28 rejection under 35 U.S.C. 102(b). Feistel 4,316,055 does not disclose the data section to further include fourth, fifth, and sixth registers wherein substitution units are coupled to an output of the fourth register and an input of the sixth register and linear transformation units are coupled between an output of the fifth register and an input of the fourth register and an output of the sixth register and an input of the fifth register. However, a step code ciphering system found in Feistel 3,798,360 largely covers these

limitations regarding a fourth, fifth, and sixth blocks with the above substitution and transformation relations (see Feistel 3,798,360; Figure 1, Reference Nos. 20, 22, 28, Steps 1, 2, 3, 4, 5, 6 and related text; Figures 3a-c and related text, especially 'MANGLER' and 'CONFUSER'). Furthermore, since Feistel 3,798,360 teaches that the segmentation of the data blocks are a matter of design choice (see Feistel 3,798,360; col. 3, lines 19-24; col. 4, lines 65-68), the fourth, fifth, and sixth blocks are operatively functional as fourth, fifth, and sixth registers. It would be obvious to one of ordinary skill in the art at the time the invention was made to apply the apparatus of Feistel 3,798,360 to the data section of Feistel 4,316,055. Motivation for such an implementation enables an efficient and secure ciphering means using substitution and transformation steps as taught by Feistel 3,798,360. The aforementioned covers claims 34-36.

17. As per claims 29-31, Feistel 4,316,055 covers a combination block/stream encoding apparatus as outlined above in the claim 28 rejection under 35 U.S.C. 102(b). Feistel 4,316,055 does not disclose the block cipher key section including first, second, and third registers wherein substitution units are coupled to an output of the first register and an input of the third register and linear transformation units are coupled between an output of the second register and an input of the first register and an output of the third register and an input of the second register. However, it is notoriously well known in the art for cipher keys to be generated by a cryptographic cipher (devices that are aptly named pseudo-random number generators) since cryptographic ciphers create essentially random strings from non-random strings (for encryption purposes).

Examiner takes Official Notice that cipher keys are conventionally generated using cryptographic means. Furthermore, the limitations claimed in claims 29-31 are based on cipher means in a key section that are operatively identical to the cipher means in the data section outlined in the claim 34-36 rejections listed above wherein the first, second, and third registers correspond to the fourth, fifth, and sixth registers respectively. It would be obvious to one of ordinary skill in the art at the time the invention was made to apply the teachings of Feistel 3,798,360 as outlined in the claim 34-36 rejections above to the key section of the invention covered by Feistel 4,316,055. Motivation for such an implementation would enable means to create cryptographically secure cipher keys. The aforementioned cover claims 29-31.

18. As per claim 37, Feistel 4,316,055 covers a combination block/stream encoding apparatus as outlined above in the claim 29-31 and 34-36 rejections under 35 U.S.C. 103(a). In addition, the mapping section comprises a plurality of logical gates coupled with a register in the block cipher key section and a register in the data section (see Feistel 4,316, 055; Figures 2A, 2B as modified by Feistel 3,798,360; Figure 1, 'ENCIPHER'; see claim rejections 29-31).

19. As per claim 39, Feistel 4,316,055 covers a combination block/stream apparatus as outlined above in the claim 29-37 rejections under 35 U.S.C. 103(a). In addition, the second key section and the first key section are operatively equivalent to the block cipher key section and the stream cipher key section respectively. Feistel 4,316,055

also teaches that the first key section is enabled in a stream cipher mode and disabled in a block cipher mode (see Feistel 4,316,055; Figure 2a, Reference No. 5; Figure 3, Reference No. 2 and related text). Hence, the aforementioned covers claim 39.

20. As per claims 41-47, they are apparatus claims corresponding to claims 28-37 and 39, and they do not teach or define above the information claimed in claims 28-37 and 39. Therefore, claims 41-47 are rejected as being unpatentable over Feistel 4,316,055 in view of Feistel 3,798,360 for the same reasons set forth in the rejections of claims 28-37 and 39.

21. Claims 38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feistel 4,316,055 in view of Coulthart et al. U.S. Patent No. 4,641,102 (hereinafter Coulthart). As per claim 38, Feistel 4,316,055 discloses a combination block/stream encoding apparatus as outlined above in the claim 28 rejection under 35 U.S.C. 102(b). Feistel 4,316,055 is silent on the matter of the stream cipher key section further including LFSRs to generate a first, second, and third sequence of bits wherein the third sequence of data bits are shuffled using the first sequence of data and input bits and the second sequence of data and control bits. However, as specified in the claim 29-31 rejections, pseudo-random number generators are conventional means to create cryptographically secure keys. In addition, Coulthart discloses an unbiased random number generator having at least a first, second and third sequence of bits with the above mentioned shuffling units and relations using an LFSR (see Coulthart, Abstract,

Figure 1). It would be obvious to one of ordinary skill in the art at the time the invention was made to implement the random number generator as taught by Coulthart in the stream cipher key section of the invention covered by Feistel 4,316,055. Motivation for such an implementation would implement a cryptographically secure means to create cipher keys having a truer random value result as taught by Coulthart.

22. As per claim 40, it is an apparatus claim corresponding to claims 38-39 and it does not teach or define above the information claimed in claims 38-39. Therefore, claim 40 is rejected as being unpatentable over Feistel 4,316,055 in view of Feistel 3,798,360 and Coulthart for the same reasons set forth in the rejections of claims 38-39.

Response to Arguments

23. Applicant's arguments with respect to new claims 28-47 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jung W Kim whose telephone number is (703) 305-8289. The examiner can normally be reached on M-F 9:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on (703) 305-1830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jung W Kim
Examiner
Art Unit 2132

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SUPERVISORY PATENT EXAMINER
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Jk
April 24, 2004